

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant(s): Matthias Pirsch
Serial No. : 10/565,350
For: DEVICE AND METHOD FOR EXAMINING CHEMICAL
AND/OR BIOLOGICAL SAMPLES, AND OBJECTIVE CAP
Filed: April 3, 2007
Examiner: Derek S. Chapel
Art Unit: 2872
Confirmation No. : 2168
Customer No. : 27,623

Attorney Docket No.: 175.8345USU

**Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

APPEAL BRIEF FILED UNDER 35 U.S.C. §134

Dear Sir:

Further to the Notice of Appeal filed herewith, the Appeal Brief filed herewith under 35 U.S.C. §134 and 37 C.F.R. §41.37 is believed to comply with the requirements set forth in 37 C.F.R. §41.37(c).

(1) Real Party in Interest

The real party in interest is Evotech Technologies GmbH. Ownership by Evotech Technologies GmbH is established by assignment document recorded for this application on April 3, 2007 on Reel 019190, Frame 0324.

(2) Related Appeals and Interferences

The undersigned attorney is not aware of any related patent applications or patents involved in any appeal or interference proceeding.

(3) Status of the Claims

Claims 1-14 are pending in this application, and are the subject of this Appeal, where claims 1, 2, 9, and 12 are independent.

Independent claims 9 and 12, as well as dependent claims 10-11 and 13, respectively, were rejected under 35 U.S.C. §102(b) over Appellant's own International Publication No. WO 02/093232 to Hummel (the '232 International Publication).

Independent claims 1 and 2, as well as dependent claims 3-8, were rejected under 35 U.S.C. §103(a) over the '232 International Publication in view of U.S. Patent No. 6,809,794 to Harry Sewell (Sewell).

(4) Status of Amendments

No amendments were filed after the Final Rejection dated August 16, 2010.

(5) Summary of claimed subject matter

The claimed invention as set forth in **independent claim 1** provides a device for examining chemical or biological samples. The device includes a sample carrier (10), an objective (14), a film (22) of an immersion medium, and a protection means (24). The sample carrier (10) receives the samples. The objective (14) allows the samples to be observed through a sample carrier wall (12). A gap (20) is defined

between an outer surface (18) of the sample carrier wall (12) and an exit lens (16) of the objective (14). The film (22) of immersion medium is provided in the gap (20) such that the film (22) is in contact with both the outer surface (18) of the sample carrier wall (12) and the exit lens (16) of the objective (14). **See Figs. 1 and 4, as well as page 7, line 27 through page 8, line 4.** The protection means (24) surrounds the exit lens (16) to prevent the objective (14) from becoming fouled by the immersion medium. The protection means (24) is connected with a suction means for discharging the immersion medium. The protection means (24) includes a capillary channels (30) that are connected with the suction means to discharge the immersion medium. The capillary channels (30) each have an inlet opening (32) that is arranged annularly around the exit lens (14). **See Fig. 2, as well as page 8, lines 6-17.**

The claimed invention as set forth in **independent claim 2** provides a device for examining chemical or biological samples. The device includes a sample carrier (10), an objective (14), a film (22) of an immersion medium, and a protection means (24). The sample carrier (10) receives the samples. The objective (14) allows the samples to be observed through a sample carrier wall (12). A gap (20) is defined between an outer surface (18) of the sample carrier wall (12) and an exit lens (16) of the objective (14). The film (22) of immersion medium is provided in the gap (20) such that the film (22) is in contact with both the outer surface (18) of the sample carrier wall (12) and the exit lens (16) of the objective (14). **See Figs. 1 and 4, as well as page 7, line 27 through page 8, line 4.** The protection means (24) surrounds the exit lens (16) to prevent the objective (14) from becoming fouled by the immersion medium. The protection means (24) is connected with a suction means for discharging the immersion medium. The protection means (24) includes a capillary channel (30) connected with the suction means to discharge the immersion medium. The capillary channel (30) is an annular gap around the exit lens (16). **See Figs. 2 and 3, as well as page 8, lines 6-17.**

The claimed invention as set forth in **independent claim 9** provides a method for examining chemical or biological samples. In the claimed method, an exit lens (16) of an objective (14) is arranged opposite a sample carrier (10) for observing the sample through a sample carrier wall (12). Between an outer surface (18) of the sample carrier wall (12) and the exit lens (16) of the objective (14) a gap (20) is defined such that a film (22) of immersion medium is in contact with both the outer surface (18) and the exit lens (16). **See Figs. 1 and 4, as well as page 7, line 27 through page 8, line 4.** Wherein via a capillary channel (30), which is defined in the protection means (24) surrounding the objective (14) as an annular gap around the exit lens (16), the immersion medium is discharged automatically, at least with the aid of capillary forces. **See Figs. 2 and 3, as well as page 8, lines 6-17.**

The claimed invention as set forth in **independent claim 12** provides an objective cap (24) for protecting an objective (14) from becoming fouled by an immersion medium. The objective cap (24) includes an inner collar portion (26), an outer collar portion (28), and an outlet opening (34). The inner collar portion (26) is placed onto the objective (14) and the outer collar portion (28) is around the inner collar portion (26). The inner collar portion (26) and the outer collar portion (28) are at least partly spaced relative to each other such that an essentially annular capillary channel (30) is defined. The outlet opening (34) is provided in the outer collar portion (28) and an opening (32) of the capillary channel (32) is connected with a suction means via the outlet opening (34). **See Figs. 1 through 4, as well as page 7, line 27 through page 8, line 17.**

(6) Grounds of rejection to be reviewed on appeal

The first ground presented for review is the propriety of the rejection of independent claim 9, as well as dependent claims 10-11, under 35 U.S.C. §102(b) over the '232 International Publication.

The second ground presented for review is the propriety of the rejection of independent claim 12, as well as dependent claim 13, under 35 U.S.C. §102(b) over the '232 International Publication.

The third ground presented for review is the propriety of the final rejection of independent claim 1, as well as dependent claims 3-8, under 35 U.S.C. §103(a) over the '232 International Publication in view of Sewell.

The fourth ground presented for review is the propriety of the rejection of independent claim 2 under 35 U.S.C. §103(a) over the '232 International Publication in view of Sewell.

(7) Arguments

The First Office Action and the subsequent, Final Office Action used a ***machine translation*** of Appellant's own '232 International Publication to reject the pending claims. Appellant respectfully submits that the ***machine translation*** of the '232 International Publication has resulted in the Final Office Action misunderstanding and misapplying the teachings of the reference, which have lead to the improper rejection of claims 1-14.

In the interest of clarity, Appellant refers herein to the text from the English language equivalent to the '232 International Publication, namely Appellant's own U.S. Patent No. 7,304,793 to Hummel (the '793 Patent), which is a National Stage entry of the '232 International Publication. The translation provided by the Appellant's own '793 Patent was raised in Appellant's response to the First Office Action.

(a) First Ground - Claims 9-11 stand or fall together

Independent claim 9, as well as dependent claims 10-11, were improperly rejected under 35 U.S.C. §102(b) over the '232 International Publication.

Generally, the differences between the device of Appellant's claim 9 and the device disclosed by Appellant's earlier '232 International Publication can be seen by comparing Figure 2 of the '232 International Publication to Figure 2 of the present application, which are reproduced below for ease of analysis.

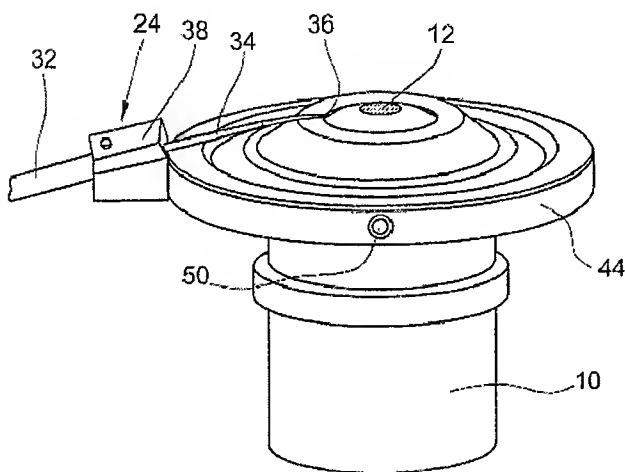


FIG. 2 of '232 International Publication

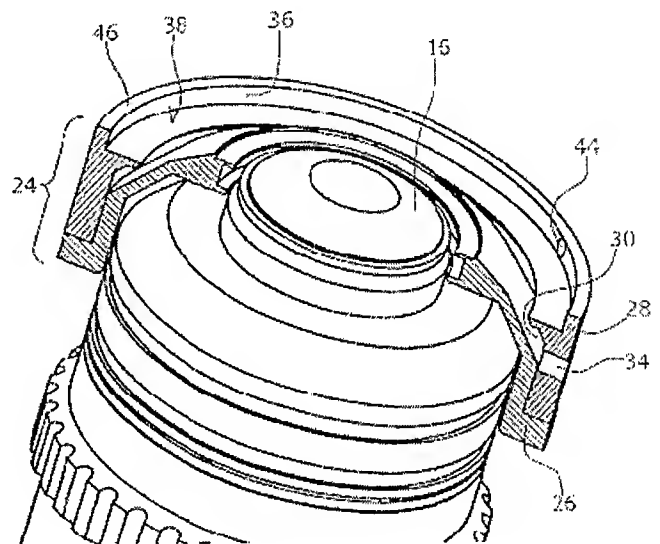


FIG. 2 of the present application

The '232 International Publication, as translated by the '793 Patent, discloses a collar-shaped take-up means 44 surrounding the objective 10. Take-up means 44 serves for taking up immersion medium 46 provided between exit lens 12 and sample support 14 if excess immersion medium is supplied via-supply device 24 to gap 22 or if the supplying is performed continuously. The collar-shaped take-up means 44 comprises a discharge opening 50 connected to a hose 48. Further, the hose 48 can have a device 100 for suctional removal connected thereto. See col. 5, lines 47-57.

The Appellant's present application recognized that the device of Appellant's '232 International Publication leads to certain drawbacks and difficulties. Specifically, the present application discloses, with respect to the '232 International Publication, that excess immersion medium normally forms individual drops in the collection means, where the drops are **difficult to draw off the collection means by suction via a single suction opening**. Over time, the drops become increasingly larger such that there is the risk of a drop becoming large enough that **the immersion medium flows over the edge** of the collection means. See page 2, lines 9-20 of the present application.

Thus, Appellant submits that the '232 International Publication, as translated by the '793 Patent, merely discloses an **open topped, collar-shaped take-up 44**, which collects excess fluid that flows down its external surface and **drains this collected fluid via opening 50**.

It can be seen that the present application, much like the '232 International Publication, forms an overflow reservoir 36 with an overflow opening 44. Here, overflow reservoir 36 and opening 44 of the present application are similar to the collar-shaped take-up 44 and the discharge opening 50 of the '232 International Publication.

However, to overcome the deficiencies present in the design of their own device in the '232 International Publication, the present application further includes a reservoir bottom opening 40 in the bottom 38 of the reservoir 36. The bottom opening 40 bottom opening 40 is identical with the capillary channel opening 32, which leads to the capillary channel 30. See page 8, lines 11-31.

Appellant respectfully submits that the '232 International Publication simply fails to disclose or suggest the capillary channel 30 of the present application.

Turning now to the claimed elements, independent claim 9 recites, in part, that "via **a capillary channel defined in the protection means surrounding the objective** as an annular gap around the exit lens **the immersion medium is discharged automatically, at least with the aid of capillary forces** (emphasis added)".

Again, Appellant submits that the '793 Patent merely discloses an opened top collar-shaped take-up means 44 surrounding the objective 10, where the take-up means 44 has a discharge opening 50 connected to a hose 48. See col. 5, lines 47-57.

However, Appellant submits that the opened top collar-shaped take-up means 44 of the '232 International Publication fails to disclose or suggest the "capillary channel" as claimed.

Moreover, Appellant submits that the '232 International Publication merely discloses an open topped, collar-shaped take-up 44, which collects excess fluid that flows down its external surface and then drains this collected fluid via opening 50. Thus, the '232 International Publication fails to disclose or suggest immersion medium being discharged "automatically via a capillary channel with at least the aid of capillary forces" as claimed.

In sum, Appellant submits that it is impossible for the **opened top** collar-shaped take-up 44 of the '232 International Publication to be reasonably considered a "capillary channel" as claimed.

Furthermore, claim 9 recites that the capillary channel is defined as "**an annular gap around the exit lens** (emphasis added)."

Notwithstanding the above and presuming arguendo that the take-up 44 and the discharge opening 50 of the '232 International Publication somehow discloses a "capillary channel", which Appellant maintains it does not, Appellant submits that the '232 International Publication clearly fails to disclose or suggest a capillary channel as an **annular gap** around the exit lens as recited by claim 9.

Accordingly, it is respectfully submitted that the '232 International Publication, when properly understood, does not disclose or suggest claims 9, 10, or 11. Appellant therefore respectfully requests that the Board of Appeals reverse the final rejection of claims 9-11.

(b) Second Ground - Claims 12-13 stand or fall together

Independent claim 12, as well as dependent claim 13, were improperly rejected under 35 U.S.C. §102(b) over the '232 International Publication.

Independent claim 12 recites, in part, "an outer collar portion arranged around the inner collar portion, wherein the **inner collar portion** and the outer collar portion are at least partly spaced relative to each other such that **an essentially annular capillary channel is defined** (emphasis added)".

Appellant submits that the '232 International Publication fails to disclose or suggest an inner collar portion and, thus, clearly fails to disclose or suggest the capillary channel defined between this missing element and the collar-shaped take-up 44.

Again, Appellant maintains that the '232 International Publication, as translated by the '793 Patent, merely discloses an open topped, collar-shaped take-up 44, which collects excess fluid that flows down its external surface and then drains this collected fluid via opening 50.

Thus, the '232 International Publication fails to disclose or suggest that any part of the collar-shaped take-up 44 can be read on the claimed "inner collar portion" and, thus, no part of the '232 International Publication discloses or suggests a "capillary channel" as claimed.

As further evidence of the difference between claim 12 and the disclosure of Appellant's own 232 International Publication, Appellant points to the language of claim 13, which depends from claim 12. Claim 13 recites, in part, "an overflow reservoir arranged in the outer collar portion for receiving the immersion medium". The Final Office Action points to element 44, namely the collar-shaped take-up, as reading on the claimed "overflow reservoir".

Thus, the Final Office Action asserts that the same element (i.e., collar-shaped take-up 44) reads on **both** the "overflow reservoir" of claim 13 and the "capillary channel" of claim 12.

It is this very confusion, presumably caused by the Final Office Action's reliance on the machine translation of the '232 International Publication instead of the English language equivalent to the '232 International Publication, namely the '793 Patent, that highlights the distinction between claim 12 and the disclosure of the '232 International Publication. Specifically, the '232 International Publication merely has an overflow reservoir (e.g., collar-shaped take-up 44), but simply fails to disclose or suggest a "capillary channel" as recited by claim 12.

Accordingly, it is respectfully submitted that the '232 International Publication does not disclose or suggest claims 12 or 13. Appellant therefore respectfully requests that the Board of Appeals reverse the final rejection of claims 12 and 13.

(c) Third Ground - Claims 1 and 3-8 stand or fall together

Independent claim 1, as well as dependent claims 3-8, were improperly rejected under 35 U.S.C. §102(b) over the '232 International Publication in view of Sewell.

Independent claim 1 has been clarified to recite that the protection means comprises "**a plurality of capillary channels** connected with the suction means for discharging the immersion medium (emphasis added)".

The Final Office Action acknowledges that the '232 International Publication fails to disclose a plurality of capillary channels. Rather, the Final Office Action asserts that Sewell discloses a plurality of capillary channels.

The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). See also *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.")

Appellant respectfully submits that the Final Office Action has failed to meet its burden of establishing a *prima facie* case of obviousness because the Final Office Action has failed to determine the level of skill in the art.

Presuming *arguendo* that the '232 International Publication and Sewell show the elements urged by the Final Office Action, the Final Office Action has presented no line of reasoning, and we know of none, as to who one skilled in the art is or why that person viewing the collective teachings of the references would have found it obvious to

selectively pick and choose various elements and/or concepts from the several references relied upon to arrive at the claimed invention. Rather, Appellant submits that the collection of references supports the inescapable conclusion that the Final Office Action has simply pieced the references together to support a rejection on the basis of hindsight.

Furthermore, in order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ("A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem."); *Wang Laboratories Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993).

Appellant submits that Sewell is not analogous art to the '232 International Publication such that the proposed combination of cited art fails to disclose or suggest claim 1.

Claim 1 is directed to a "device for examining chemical or biological samples". Similarly, the '232 International Publication is directed to "device for examining chemical or biological samples".

In contrast, Sewell is directed to the field of photolithography and inverted wafer-projection optics interfaces. Thus, Appellant submits that Sewell is not in the field of Appellant's endeavor.

Further, Appellant submits that Sewell deals with matter that would not logically would have commended itself to an inventor's attention in considering the problem resolved by claim 1.

The present application discloses, with respect to the '232 International Publication, that excess immersion medium normally forms individual drops in the collection means, where the drops are **difficult to draw off the collection means by suction via a single suction opening**. Over time, the drops become increasingly larger such that there is the risk of a drop becoming large enough that **the immersion medium flows over the edge** of the collection means. See page 2, lines 9-20 of the present application.

In contrast to the problem resolved by the invention of the present application, Sewell is directed to systems and methods that **confine** photolithographic liquids between the wafer being processed and optical projection system. In sum, Sewell is directed to resolving the problem of "confining liquid" and not to the problem of "removing excess liquid" as in the combination recited by claim 1. Sewell is, therefore, not directed to resolving the problem of claim 1.

Accordingly, Appellant submits that Sewell is non-analogous art to the '232 International Publication cited by the Final Office Action such that the proposed combination of Sewell with the '232 International Publication fails to disclose or suggest claim 1.

Presuming arguendo that Sewell was deemed analogous art, which Appellant maintains would be incorrect, Sewell fails to disclose or suggest the plurality of capillary channels as claimed.

Instead, Sewell discloses that the optical protection system 100 includes catch basins 105 that remove any stray liquid that may occur as the wafer 101 is scanned along the horizontal axis. Sewell specifically discloses that, in the present invention, gravity is allowed to do the work of confining the liquid. See col. 3, lines 47-58.

As discussed in detail above with respect to the Final Office Action's mischaracterization of the disclosure of the '232 International Publication, Appellant submits that Sewell merely discloses open topped catch basins that work by gravity, but simply fails to disclose or suggest that these catch basins are "capillary channels" as recited by claim 1.

Accordingly, Appellant submits that the Final Office Action has failed to establish a *prima facie* case of obviousness, has used non-analogous art in its rejection, and has failed to establish that the cited art discloses each and every element recited by the combination of claim 1. As such, claim 1, as well as claims 3-8 that depend therefrom, are in condition for allowance. Reconsideration and withdrawal of the rejection to claims 1 and 3-8 are respectfully requested.

It is respectfully submitted that the '232 International Publication, alone or in combination with Sewell does not disclose or suggest claims 1 or 3-8. Appellant therefore respectfully requests that the Board of Appeals reverse the final rejection of claims 1 and 3-8.

(d) Fourth Ground – Claim 2 stands alone

Independent claim 2 was improperly rejected under 35 U.S.C. §102(b) over the '232 International Publication in view of Sewell.

Independent claim 2 recites, in part, that "the protection means comprises a **capillary channel** (emphasis added)".

As discussed in detail above, Appellant maintains that the collar-shaped take-up 44 of the '232 International Publication, as properly understood from the translation of the '793 Patent, and the catch basins 105 of Sewell, which use gravity to capture stray liquid, cannot reasonably be considered to define a "capillary channel" as recited by claim 2.

Moreover, claim 2 recites that the capillary channel is "configured as an **annular gap** around the exit lens (emphasis added)".

As also discussed in detail above, Appellant maintains that the collar-shaped take-up 44 of the '232 International Publication, as properly understood from the translation of the '793 Patent, and the catch basins 105 of Sewell cannot reasonably be considered to be configured as an annular gap as recited by claim 2.

Instead, the '232 International Publication and the catch basins 105 of Sewell are both merely open topped channels but clearly do not disclose or suggest a capillary channel configured as an annular gap as claimed.


Accordingly, it is respectfully submitted that the '232 International Publication, alone or in combination with Sewell does not disclose or suggest claim 2. Appellant therefore respectfully requests that the Board of Appeals reverse the final rejection of claim 2.

Summary

In summary, Appellants respectfully request that the Board of Appeals reverse the final rejections of claims 1-14, thereby enabling all of the pending claims to be allowed.

Respectfully submitted,

November 16, 2010



Paul D. Greeley

Reg. No. 31,019

Attorney for Appellant(s)

Ohlandt, Greeley, Ruggiero & Perle, L.L.P.

One Landmark Square, 10th floor

Stamford, CT 06901-2682

Tel: (203) 327-4500

Fax: (203) 327-6401

(8) Claims Appendix

Claims 1-14, herein on appeal, are set forth below.

1. A device for examining chemical or biological samples, comprising:
a sample carrier for receiving the samples,
an objective for observing the samples through a sample carrier wall, wherein a gap is defined between an outer surface of the sample carrier wall and an exit lens of the objective,
a film of an immersion medium to be provided in the gap such that the film is in contact with both the outer surface of the sample carrier wall and the exit lens of the objective, and
a protection means surrounding the exit lens for preventing the objective from becoming fouled by the immersion medium, wherein the protection means is connected with a suction means for discharging the immersion medium,
wherein the protection means comprises a plurality of capillary channels connected with the suction means for discharging the immersion medium, the plurality of capillary channels each having an inlet opening that is arranged annularly around the exit lens.

2. A device for examining chemical or biological samples, comprising:
a sample carrier for receiving the samples,
an objective for observing the samples through a sample carrier wall, wherein a gap is defined between an outer surface of the sample carrier wall and an exit lens of the objective,
a film of an immersion medium to be provided in the gap such that the film is in contact with both the outer surface of the sample carrier wall and the exit lens of the objective, and
a protection means surrounding the exit lens for preventing the objective from becoming fouled by the immersion medium, wherein the protection means is connected

with a suction means for discharging the immersion medium,

wherein the protection means comprises a capillary channel connected with the suction means for discharging the immersion medium, and

wherein the capillary channel is essentially configured as an annular gap around the exit lens.

3. The device according to claim 1, wherein the protection means comprises at least two collar portions arranged around the objective and defining the capillary channel.

4. The device according to one of claim 1, wherein the protection means comprises an overflow reservoir for additionally receiving the immersion medium.

5. The device according to claim 4, wherein the overflow reservoir comprises a reservoir bottom having a reservoir bottom opening via which the capillary channel is connected with the overflow reservoir.

6. The device according to claim 1, further comprising a supply means having a supply line with an outlet opening, wherein the outlet opening is arranged near the exit lens of the objective so that the immersion medium is supplied into the gap at least partly with the aid of capillary forces.

7. The device according to claim 1, wherein the capillary channel is connected with a supply means for supplying the immersion medium, and the capillary channel comprises a capillary channel opening that is arranged near the exit lens so that the immersion medium is supplied into the gap at least partly with the aid of capillary forces.

8. The device according to claim 7, wherein the capillary channel is connected with a valve, wherein the valve is connected with the suction means and with the supply means.

9. A method for examining chemical or biological samples, wherein an exit lens of an objective is arranged opposite a sample carrier for observing the sample through a sample carrier wall, wherein between an outer surface of the sample carrier wall and the exit lens of the objective a gap is defined such that in the gap a film of an immersion medium is arranged that is in contact with both the outer surface of the sample carrier wall and the exit lens of the objective,

wherein via a capillary channel defined in the protection means surrounding the objective as an annular gap around the exit lens the immersion medium is discharged automatically, at least with the aid of capillary forces.

10. The method according to claim 9, wherein the immersion medium is supplied automatically, at least partly with the aid of capillary forces.

11. The method according to claim 10, wherein the discharge of the immersion medium is adjusted relative to the supply such that the volume of the film of immersion medium essentially remains constant.

12. An objective cap for protecting an objective from becoming fouled by an immersion medium, comprising:

an inner collar portion adapted to be placed onto the objective,

an outer collar portion arranged around the inner collar portion, wherein the inner collar portion and the outer collar portion are at least partly spaced relative to each other such that an essentially annular capillary channel is defined, and

an outlet opening provided in the outer collar portion, via which an opening of the capillary channel is connected with a suction means.

13. The objective cap according to claim 12, wherein an overflow reservoir arranged in the outer collar portion for receiving the immersion medium, wherein the overflow reservoir comprises a reservoir bottom having a reservoir bottom opening via which the capillary channel is connected with the overflow reservoir for discharging immersion medium.

14. The objective cap according to claim 12, wherein the inner collar portion and the outer collar portion are at least partly spaced relative to each other such that a plurality of capillary channels are defined, the plurality of capillary channels each having an inlet opening that is arranged annularly around the exit lens.

(9) Evidence Appendix

None.

(10) Related Proceedings Appendix

None.